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Yasuda

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(54) **TRANSPORTATION DEVICE LAMP FIXTURE**

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F21S 8/10 (2006.01)

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CPC ***F21S 48/10*** (2013.01); ***F21S 48/1104*** (2013.01); ***F21S 48/1159*** (2013.01); ***F21S 48/1305*** (2013.01); ***F21S 48/215*** (2013.01); ***F21S 48/232*** (2013.01); ***F21S 48/321*** (2013.01); ***F21S 48/328*** (2013.01)

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CPC F21Y 2101/02; B62J 6/02; F21K 9/00; F21K 9/30; F21K 9/52; Y10S 362/80; F21S 48/115; F21S 48/10; F21S 48/321; F21S 48/1159; F21S 48/1305; F21S 48/215; F21S 48/1104; F21S 48/232; F21S 48/328; F21V 7/0008; B60Q 11/005; B60Q 1/0094; B60Q 1/2607; B60Q 1/28; B65D 43/02
USPC 362/475, 218, 227, 230, 294, 476, 487, 362/613; 348/148, 118
See application file for complete search history.

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(57) **ABSTRACT**

A transportation device lamp fixture includes a semiconductor light-emitting device, a circuit board to which the semiconductor light-emitting device is mounted, a lamp body, and a front cover that covers an opening of the lamp body. The semiconductor light-emitting device and the circuit board are housed inside of a lamp chamber formed by the lamp body and the front cover, and the circuit board is attached to an inside surface of an upper portion of the front cover or the lamp body.

7 Claims, 8 Drawing Sheets

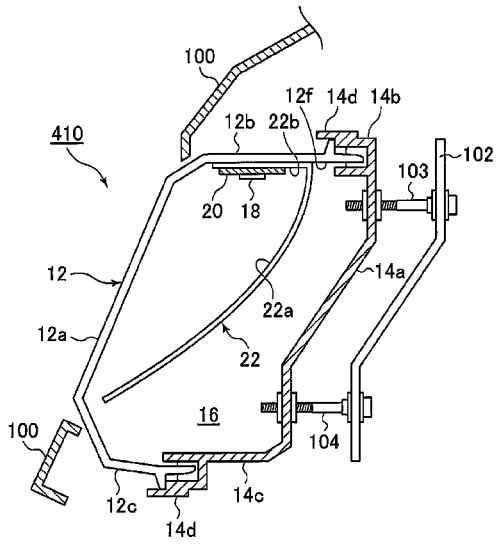

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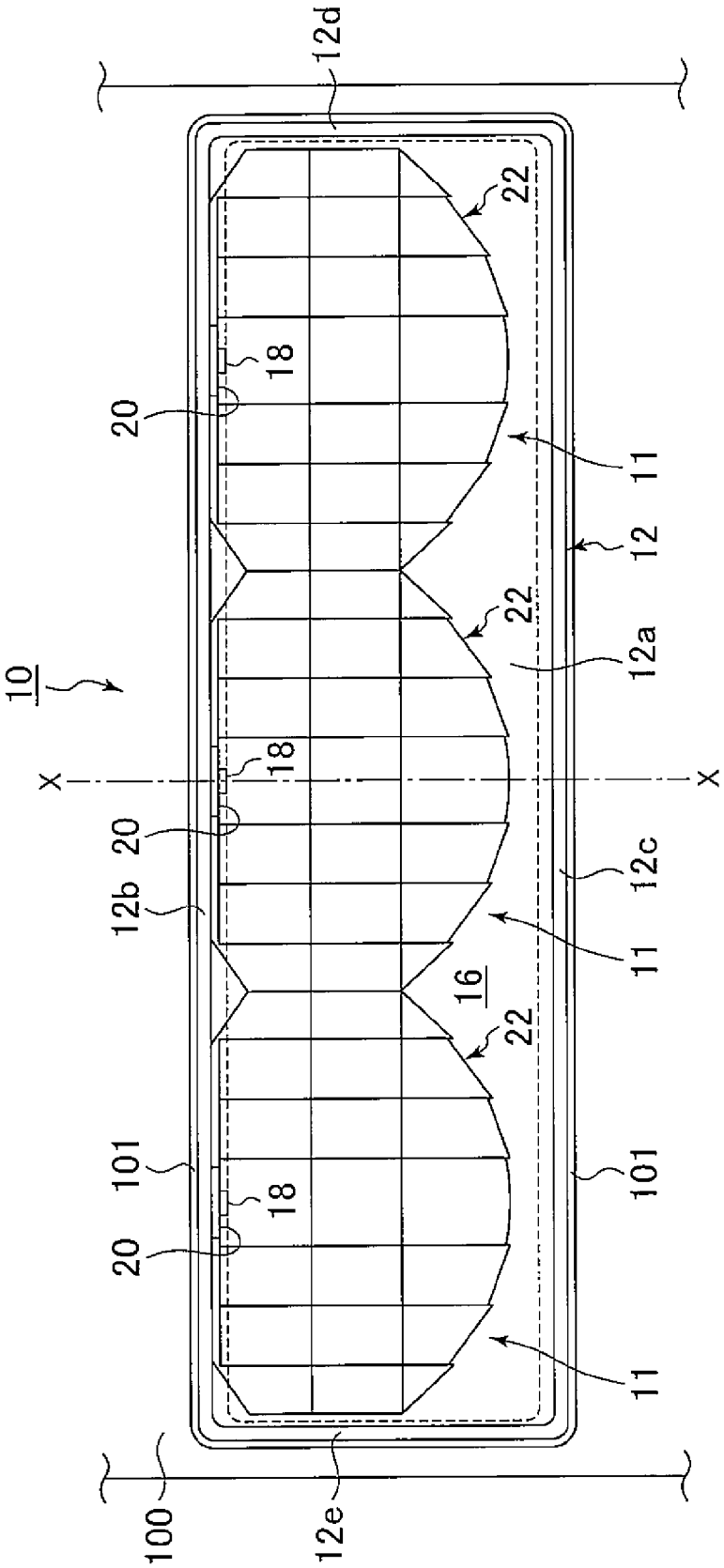
FIG. 1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22
18
20
11
12
22
12a
10
X
X
18
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12c
12b
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16
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101
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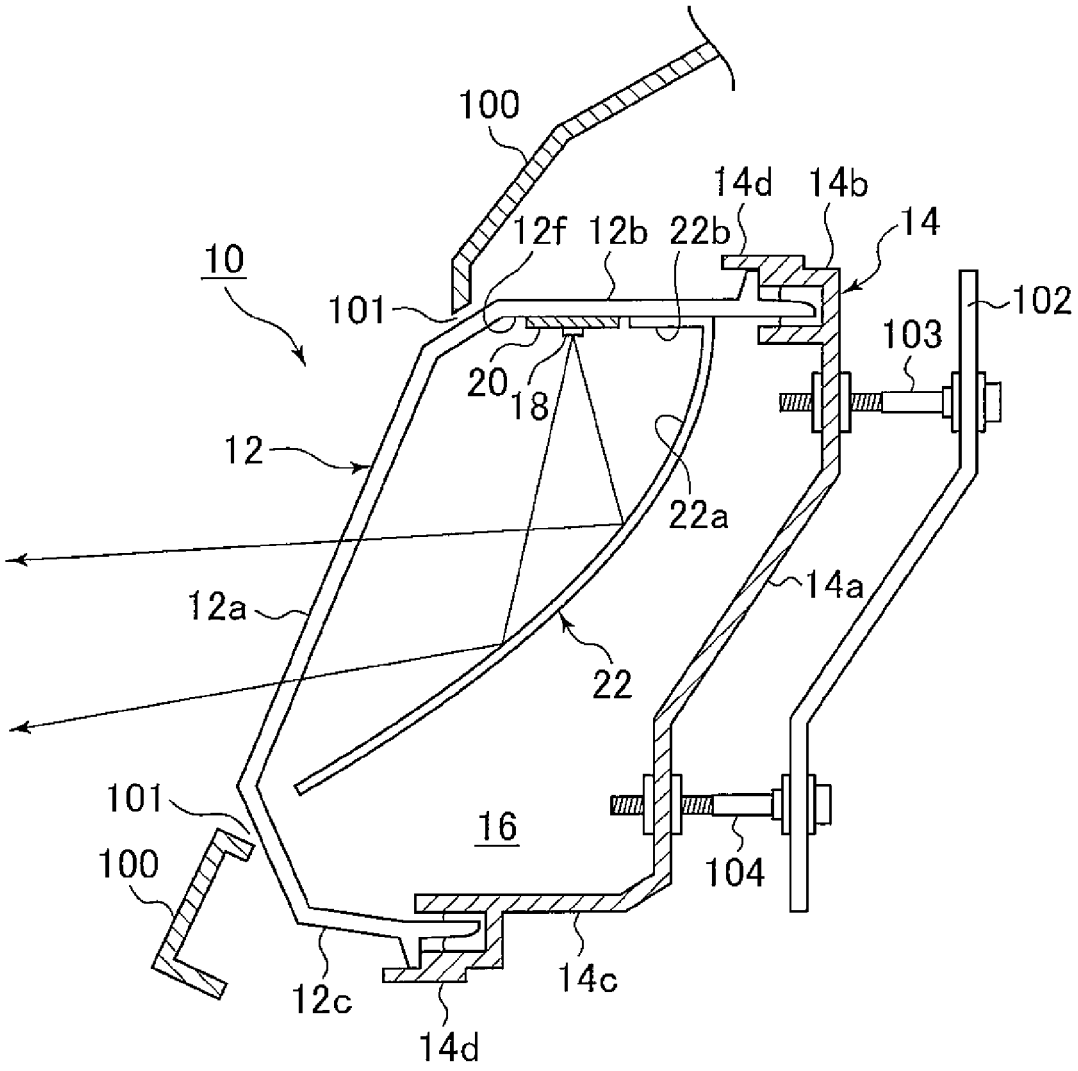
18
20
11
100
12e

FIG. 2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14d
14b
14
12f
12b
22b
10
101
102
103
20
18
12
22a
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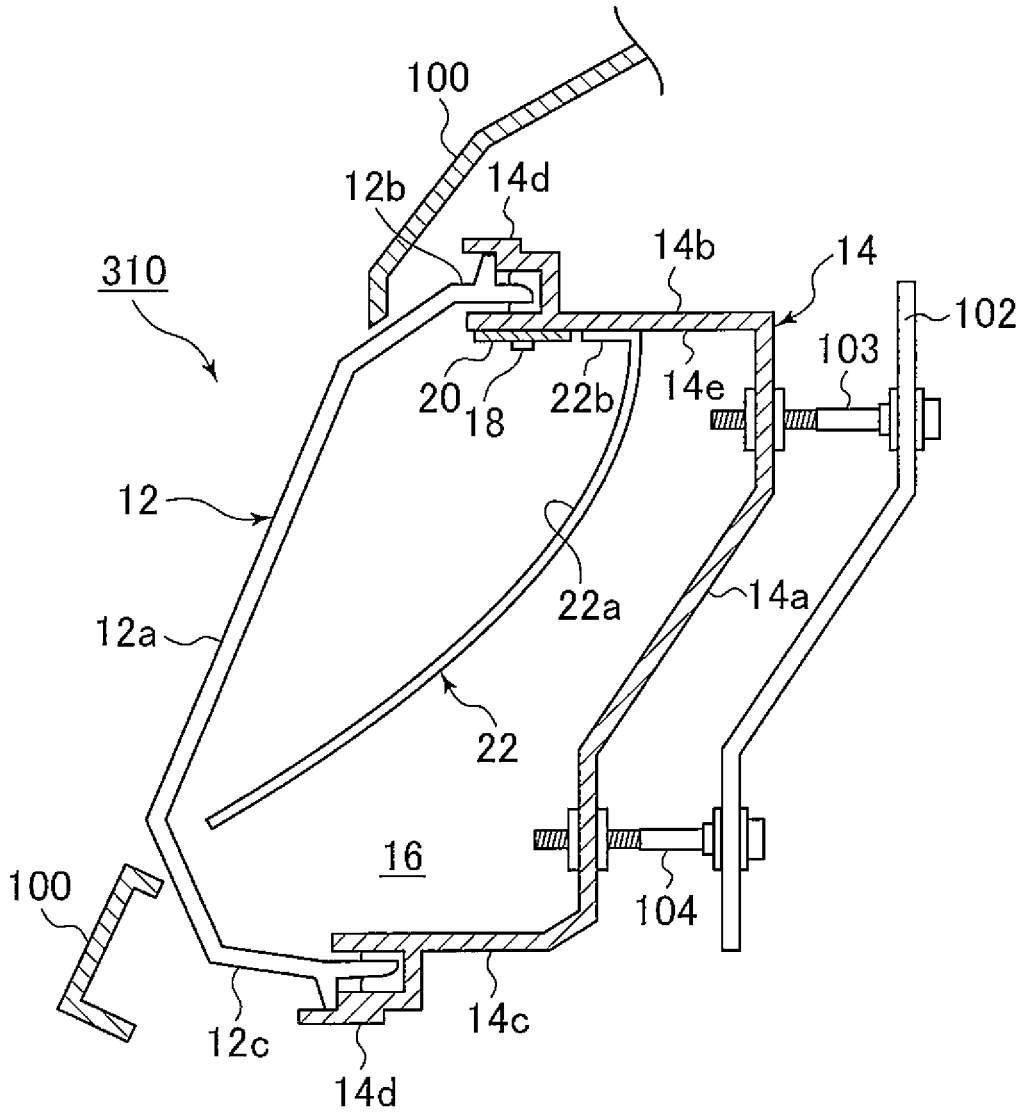
22
101
16
100
104
12c
14c
14d

FIG. 3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12b
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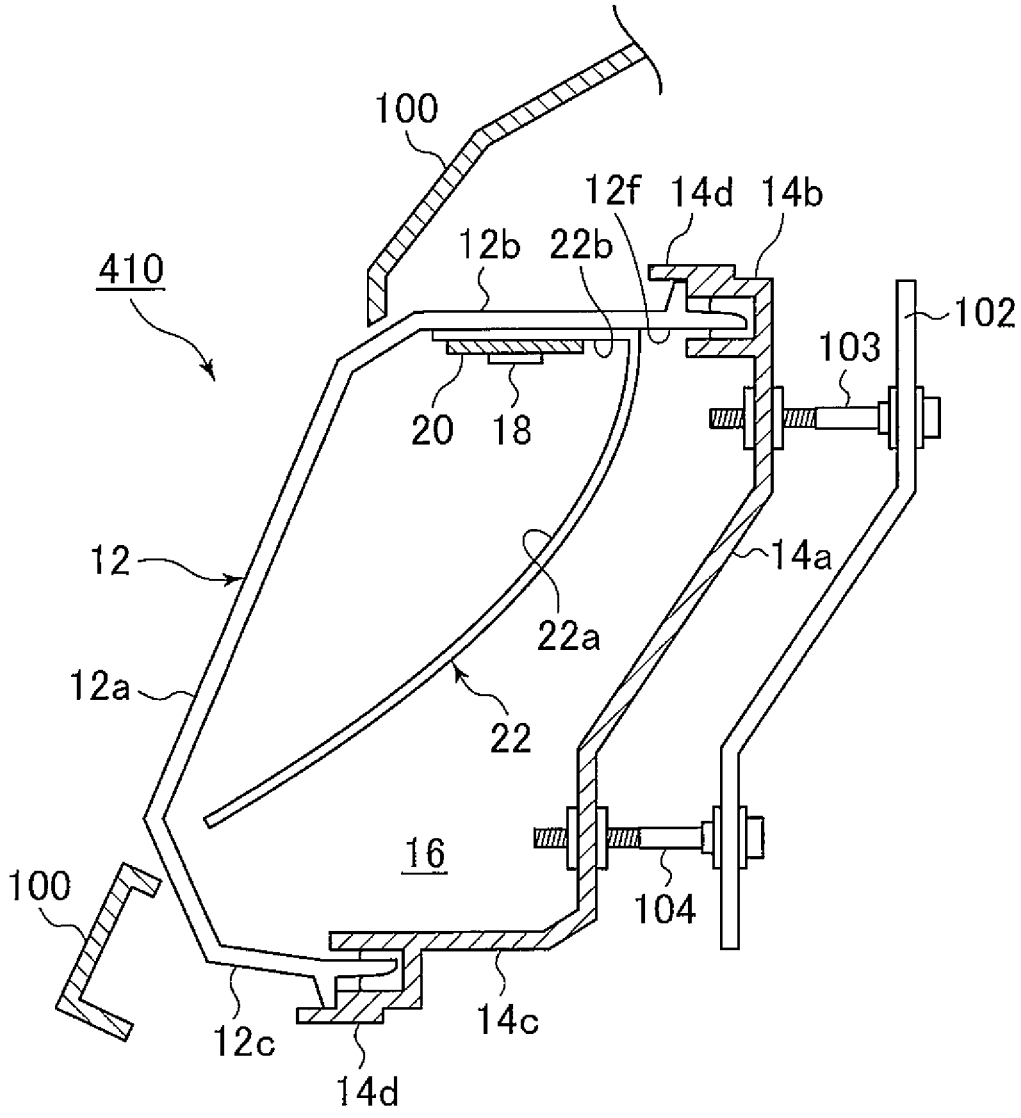
14b
14
310
102
103
20
18
22b
14e
12
22a
14a
12a
22
16
100
104
12c
14c
14d

FIG. 4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12f
14d
14b
12b
22b
410
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103
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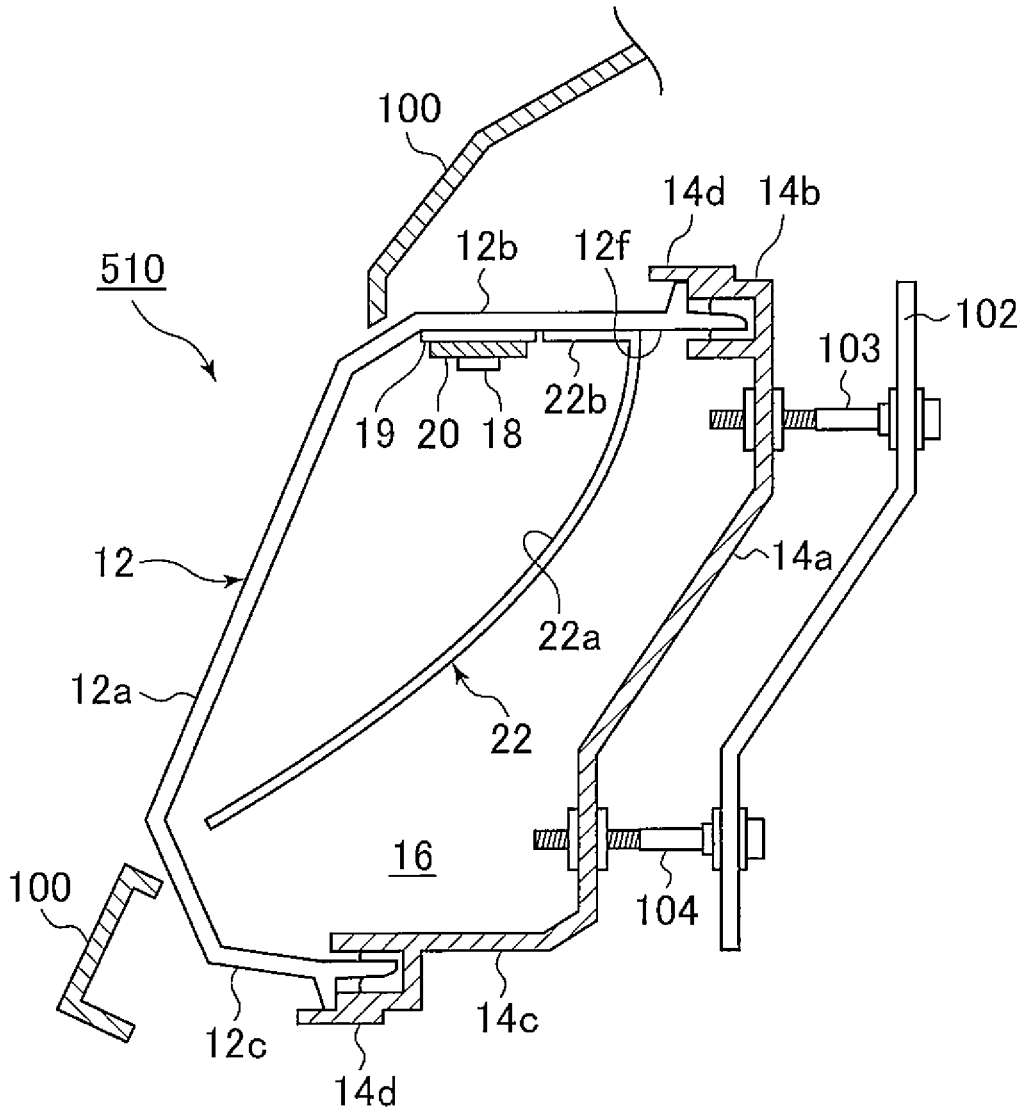
18
12
14a
22a
12a
22
16
100
104
12c
14c
14d

FIG. 5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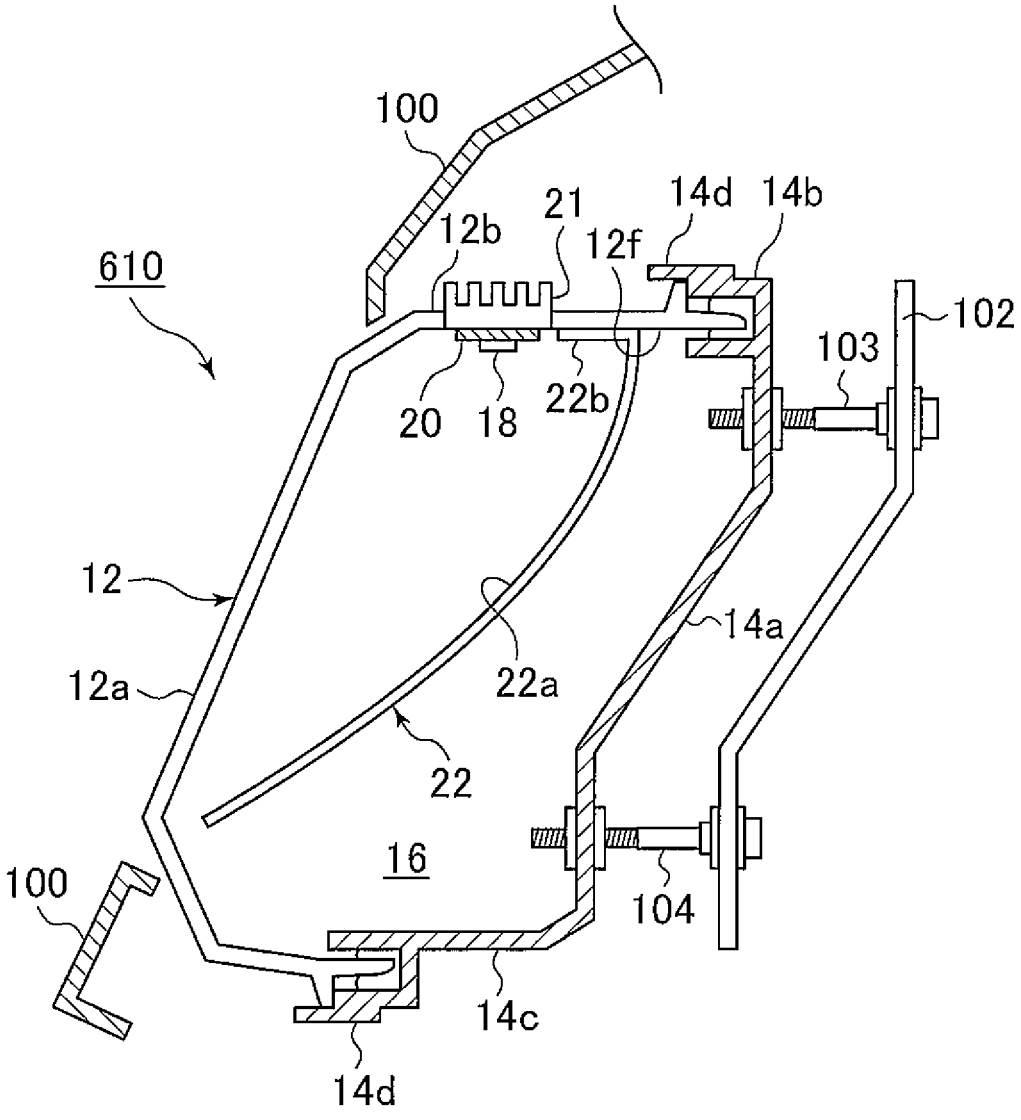
14d
14b
12b
12f
510
102
103
19
20
18
22b
12
14a
22a
12a
22
16
100
104
12c
14c
14d

FIG. 6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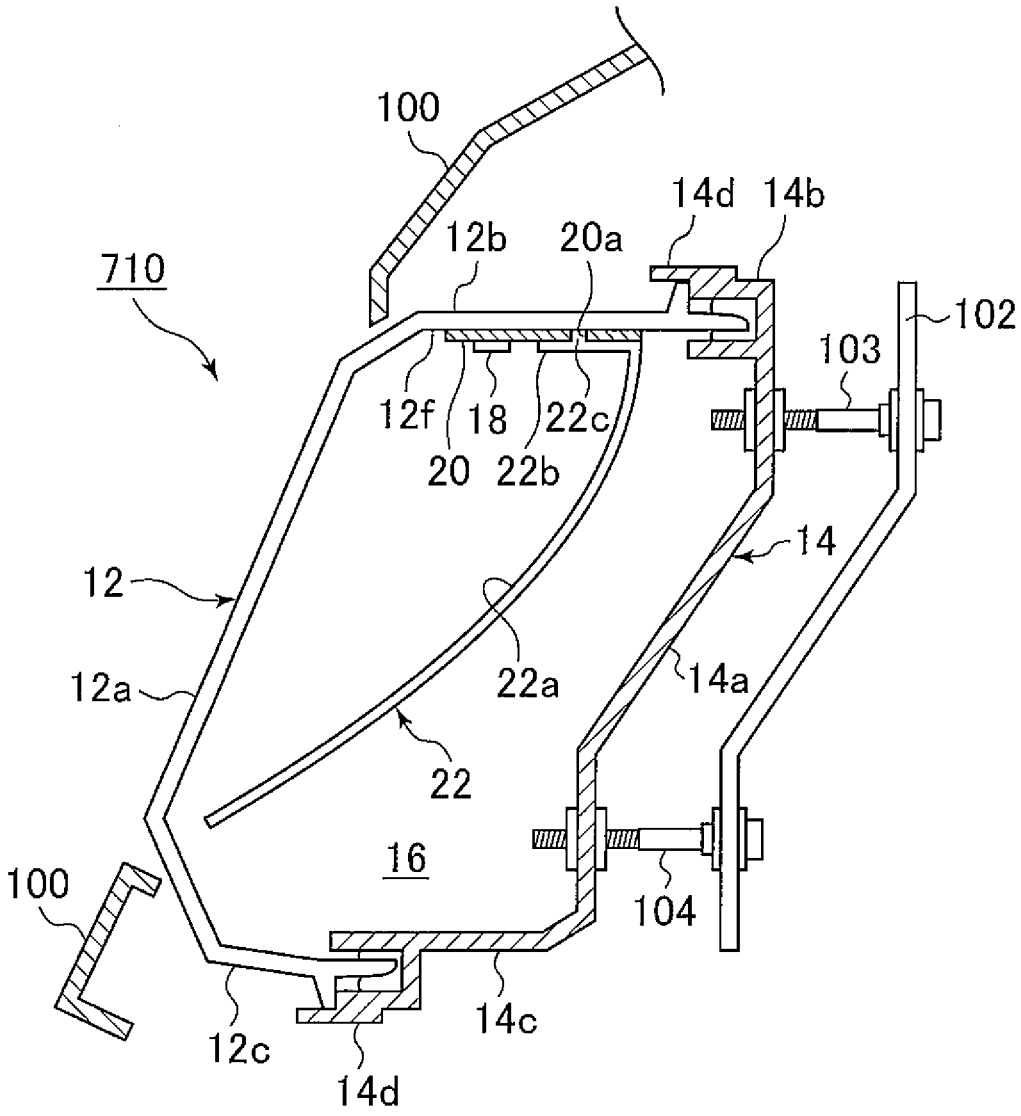
21
14d
14b
12b
12f
610
102
103
20
18
22b
12
14a
12a
22a
22
16
100
104
14c
14d

FIG. 7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20a
710
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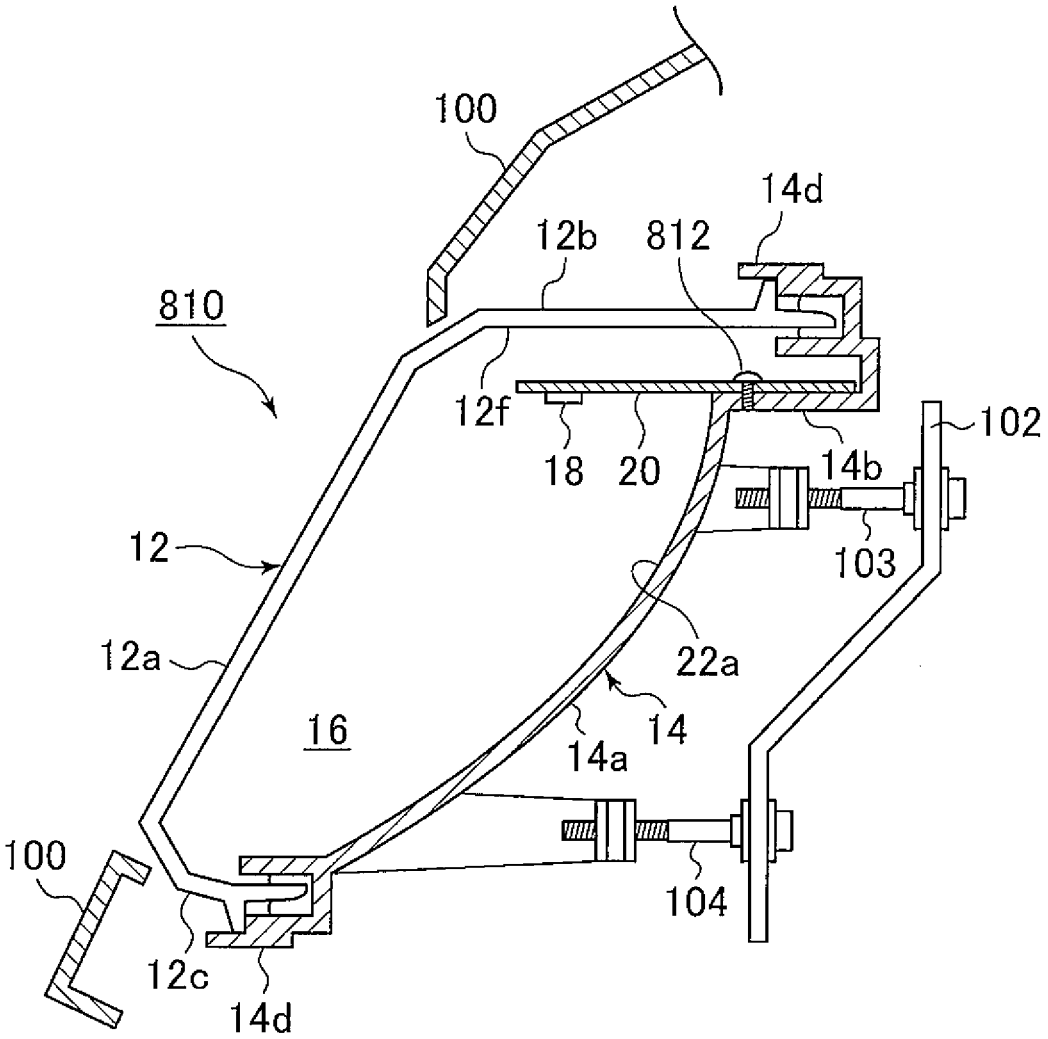
103
12f
18
22c
20
22b
14
12
22a
14a
12a
22
16
100
104
14c
12c
14d

FIG. 8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14d
12b
812
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12f
18
20
102
14b
103
12
12a
22a
16
14
14a
100
104
12c
14d

TRANSPORTATION DEVICE LAMP FIXTURE

INCORPORATION BY REFERENCE

The disclosure of Japanese Patent Application No. 2012-131536 filed on Jun. 11, 2012 including the specification, drawings and abstract is incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to a transportation device lamp fixture, and more particularly, to a transportation device lamp fixture that uses a semiconductor light-emitting device.

2. Description of Related Art

In recent years, single-person transportation devices referred to as personal mobility vehicles have been developed. A personal mobility vehicle is designed to be a mode of transportation that is between walking and existing vehicles, and is proposed as a vehicle that differs from existing vehicles, based on the concept of reducing the amount of energy consumed for personal transportation.

A personal mobility vehicle is small compared to an existing vehicle, so the position in which a lamp fixture is able to be mounted is limited. Therefore, a lamp fixture having a simpler structure than an existing vehicle lamp structure is required.

SUMMARY OF THE INVENTION

The invention thus provides a transportation device lamp fixture having a simplified structure.

One aspect of the invention relates to a transportation device lamp fixture that includes a semiconductor light-emitting device, a circuit board to which the semiconductor light-emitting device is mounted, a lamp body, and a front cover that covers an opening of the lamp body. The semiconductor light-emitting device and the circuit board are housed inside of a lamp chamber formed by the lamp body and the front cover. The circuit board is attached to an inside surface of an upper portion of the front cover or an inside surface of an upper portion of the lamp body.

According to the transportation device lamp structure of the invention, the circuit board is provided on the inside surface of the upper portion of the front cover or the lamp body, which obviates the need to provide a separate member for supporting the circuit board. As a result, the structure of the lamp fixture is able to be simplified.

BRIEF DESCRIPTION OF THE DRAWINGS

Features, advantages, and technical and industrial significance of exemplary embodiments of the invention will be described below with reference to the accompanying drawings, in which like numerals denote like elements, and wherein:

FIG. **1** is a front view of a transportation device lamp fixture according to one example embodiment of the invention;

FIG. **2** is a sectional view taken along line X-X of the transportation device lamp fixture shown in FIG. **1**;

FIG. **3** is a sectional view of a transportation device lamp fixture according to another example embodiment of the invention;

FIG. **4** is a sectional view of a transportation device lamp fixture according to yet another example embodiment of the invention;

FIG. **5** is a sectional view of a transportation device lamp fixture according to still another example embodiment of the invention;

FIG. **6** is a sectional view of a transportation device lamp fixture according to yet another example embodiment of the invention;

FIG. **7** is a sectional view of a transportation device lamp fixture according to still yet another example embodiment of the invention; and

FIG. **8** is a sectional view of a transportation device lamp fixture according to another example embodiment of the invention.

DETAILED DESCRIPTION OF EMBODIMENTS

Hereinafter, example embodiments of the invention will now be described in detail with reference to the accompanying drawings.

FIG. **1** is a front view of a transportation device lamp fixture **10** according to one example embodiment of the invention. FIG. **2** is a sectional view (a vertical sectional view) taken along line X-X of the transportation device lamp fixture **10** shown in FIG. **1**. The transportation device lamp fixture **10** shown in FIGS. **1** and **2** is a headlamp provided at the front of a transportation device such as a personal mobility vehicle, for example. Therefore, in the example embodiments below, the term "vehicle" will be used instead of the term "transportation device" for simplicity.

The vehicle lamp fixture **10** includes a lamp body **14** that has a recessed portion that is open toward the front of the lamp fixture, and a transparent front cover **12** that covers the open portion of the lamp body **14**. The lamp body **14** and the front cover **12** together form a lamp chamber **16**.

The front cover **12** is a member having a sectional recessed shape that is formed by injection molding transparent resin such as acrylic or polycarbonate, and mainly includes a front portion **12***a* that faces forward of the vehicle, an upper portion **12***b* that extends horizontally rearward from an upper end portion of the front portion **12***a*, a bottom portion **12***c* that extends rearward from a lower end portion of the front portion **12***a*, a left side portion **12***d* that extends rearward from a left end portion of the front portion **12***a*, and a right side portion **12***e* that extends rearward from a right end portion of the front portion **12***a*.

In this example embodiment, when the vehicle lamp fixture **10** is mounted to the vehicle, the front portion **12***a* or only a portion of the front portion **12***a* of the front cover **12** is exposed on the outside of the vehicle. That is, the front portion **12***a* or only a portion thereof is exposed to the outside through a hole **101** provided in a hood member **100** that is positioned at the front of the vehicle. On the other hand, the upper portion **12***b* and the bottom portion **12***c* are covered by the hood member **100**, so the upper portion **12***b*, the bottom portion **12***c*, the left side portion **12***d*, and the right side portion **12***e* are not easily visually recognizable from the outside. The hood member **100** may be a front cowl, a bumper, or a bonnet (hood) or the like of the vehicle.

The lamp body **14** is formed in a container shape that is open at the front. The lamp body **14** mainly includes a back portion **14***a* that faces the front portion **12***a* of the front cover **12**, an upper portion **14***b* that extends forward from an upper end portion of the back portion **14***a*, a bottom portion **14***c* that extends forward from a lower end portion of the back portion **14***a*, a left side portion, not shown, that extends forward from

a right end portion of the back portion **14***a*, and a right side portion, also not shown, that extends forward from a right end portion of the back portion **14***a*. The lamp body **14** may be formed using polypropylene resin, for example. A joining portion **14***d* for joining and fixing the front cover **12** to the lamp body **14** is provided on tip end portions of the upper portion **14***b*, the bottom portion **14***c*, the left side portion, and the right side portion of the lamp body **14**.

The vehicle lamp fixture **10** is supported on the vehicle via a first aiming screw **103** and a second aiming screw **104**. One end portion of the first aiming screw **103** and the second aiming screw **104** is attached to the back portion **14***a* of the lamp body **14**, and the other end portion of the first aiming screw **103** and the second aiming screw **104** is attached to a lamp supporting portion **102** of the vehicle. The posture of the vehicle lamp fixture **10** is able to be changed by turning the first aiming screw **103** and the second aiming screw **104**, which enables the aim of the vehicle lamp fixture **10** to be adjusted when the vehicle is shipped or inspected, for example.

As shown in FIG. **1**, three lamp fixture units **11** are housed in the lamp chamber **16**. These three lamp fixture units **11** are arranged lined up in a vehicle width direction. The structure of each of these lamp fixture units **11** is the same. Each lamp fixture unit **11** includes an LED **18**, a circuit board **20** to which the LED is mounted and that supplies power to the LED **18**, and a reflector **22** that reflects light emitted from the LED **18** in front of the lamp fixture.

In this example embodiment, the circuit board **20** to which the LED **18** is mounted is directly mounted onto an inside surface **12***f* of the upper portion **12***b* of the front cover **12**. The circuit board **20** is arranged such that a light-emitting surface of the LED **18** faces vertically downward. The LED **18** that is mounted on the circuit board **20** may be a white LED with a wattage of approximately 1 W, for example. Also, a plurality of LEDs **18** may be mounted on the circuit board **20**.

The method by which the circuit board **20** is fixed to the upper portion **12***b* is not particularly limited. That is, the circuit board **20** may be fastened by a screw or fixed by adhesive or the like. Alternatively, a pin may be provided on the inside surface **12***f* of the upper portion **12***b*, and the circuit board **20** may be fixed to the upper portion **12***b* by fitting the pin into a hole provided in the circuit board **20**, and then thermally caulking the pin. In this case, a fixing member such as a screw is not necessary, so the number of parts, as well as the assembly time, can be reduced.

The reflector **22** has a reflective portion **22***a* for reflecting the light that is emitted from the LED **18**, and an attaching portion **22***b* for attaching the reflector **22** to the front cover **12**. In this example embodiment, the attaching portion **22***b* of the reflector **22** is directly attached onto the inside surface **12***f* of the upper portion **12***b* of the front cover **12**, similar to the circuit board **20**. The method by which the reflector **22** is fixed to the upper portion **12***b* is not particularly limited. That is, the reflector **22** may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like.

The reflective portion **22***a* of the reflector **22** reflects the light emitted downward from the LED **18** so that it is irradiated in front of the lamp fixture, as shown in FIG. **2**. The shape of the reflective portion **22***a* is suitably designed according to the vehicle in which it is mounted, such that the reflected light creates a desired light distribution pattern.

Above, the structure of the vehicle lamp fixture **10** according to this example embodiment is described. In the vehicle lamp fixture **10**, the circuit board **20** to which the LED **18** is mounted is directly attached onto the inside surface **12***f* of the upper portion **12***b* of the front cover **12**. Employing this kind of structure obviates the need to provide a separate member for supporting the circuit board **20**, so the structure of the lamp fixture is able to be simplified. As a result, it is possible to reduce the number of parts and lower the cost, as well as make the lamp fixture lighter and smaller.

A small vehicle such as a personal mobility vehicle on which the vehicle lamp fixture **10** according to this example embodiment is mounted is very energy efficient, so the amount of exhaust heat from the radiator is small. In addition, in many cases there is usually no air-conditioner, so there is also no air-conditioner exhaust heat. That is, in a small vehicle such as a personal mobility vehicle, there is no other large heat source in the position where the vehicle lamp fixture **10** is mounted. Therefore, the environment temperature of the lamp fixture is equal to the outside air temperature plus approximately several degrees. Also, with a small vehicle, the required light distribution is not as high as it is with an existing vehicle, so several LEDs of low wattage, such as approximately 1 W, for example, are sufficient. Therefore, the upper temperature limit of the LED **18** is able to be sufficiently satisfied even if the circuit board **20** is attached to the upper portion **12***b* of the front cover **12** without a heat sink.

Also, with the vehicle lamp fixture **10** according to this example embodiment, the circuit board **20** to which the LED **18** is mounted, and the reflector **22** are both attached to the upper portion **12***b* of the front cover **12**. Attaching the circuit board **20** and the reflector **22** to a common member in this way makes it easier to position the LED **18** and the reflector **22**, so the assembly time can be reduced and the optical precision can be improved.

Further, with the vehicle lamp fixture **10** according to this example embodiment, the circuit board **20** is provided on the inside surface **12***f* of the upper portion **12***b* of the front cover **12**, and the light-emitting surface of the LED **18** faces vertically downward. If the circuit board **20** were provided on the inside surface of the bottom portion **14***c* of the front cover **12**, the light-emitting surface of the LED **18** would face vertically upward, but in this case, direct light from the LED **18** might become glare light. The production of such glare light is able to be avoided with the vehicle lamp fixture **10** according to this example embodiment.

FIG. **3** is a sectional view of a vehicle lamp fixture **310** according to another example embodiment of the invention. Constituent elements of this vehicle lamp fixture **310** that are similar or correspond to constituent elements of the vehicle lamp fixture **10** shown in FIGS. **1** and **2** will be denoted by like reference characters and redundant descriptions of those elements will be appropriately omitted.

With the vehicle lamp fixture **310** according to this example embodiment, and the circuit board **20** to which the LED **18** is mounted, and the reflector **22** are attached directly onto an inside surface **14***e* of the upper portion **14***b* of the lamp body **14**. The method by which circuit board **20** and the reflector **22** are fixed to the upper portion **14***b* is not particularly limited. That is, the circuit board **20** and the reflector **22** may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like.

With this kind of structure as well, there is no need to provide a separate member for supporting the circuit board **20**, so the structure of the lamp fixture is able to be simplified. Also, the circuit board **20** to which the LED **18** is mounted, and the reflector **22** are both attached to the upper portion **14***b* of the lamp body **14**, which makes it easier to position the LED **18** and the reflector **22**, so the assembly time can be reduced and the optical precision can be improved.

FIG. **4** is a sectional view of a vehicle lamp fixture **410** according to yet another example embodiment of the inven-

tion. Constituent elements of this vehicle lamp fixture **410** that are similar or correspond to constituent elements of the vehicle lamp fixture **10** shown in FIGS. **1** and **2** will also be denoted by like reference characters and redundant descriptions of those elements will be appropriately omitted.

With the vehicle lamp fixture **410** according to this example embodiment, the circuit board **20** to which the LED **18** is mounted is attached to the inside surface **12***f* of the upper portion **12***b* of the front cover **12** via the attaching portion **22***b* of the reflector **22**. That is, the circuit board **20** is attached to the inside surface **12***f* of the upper portion **12***b* of the front cover **12**, with the attaching portion **22***b* of the reflector **22** sandwiched in between. The method by which the circuit board **20** and the reflector **22** are fixed to the upper portion **14***b* is not particularly limited. That is, the circuit board **20** and the reflector **22** may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like.

With this kind of structure as well, there is no need to provide a separate member for supporting the circuit board **20**, so the structure of the lamp fixture is able to be simplified. As a result, it is possible to reduce the number of parts and lower the cost, as well as make the lamp fixture lighter and smaller. Also, the circuit board **20** on which the LED **18** is mounted, and the reflector **22** are both attached to the upper portion **12***b* of the front cover **12**, which makes it easier to position the LED **18** and the reflector **22**, so the assembly time can be reduced and the optical precision can be improved.

Moreover, with the vehicle lamp fixture **410** according to this example embodiment, the attaching portion **22***b* of the reflector **22** functions as a heat sink by being sandwiched between the circuit board **20** and the upper portion **12***b* of the front cover **12**, so the heat generated by the LED **18** is able to be better dissipated. To achieve this, the reflector **22** or at least the attaching portion **22***b* of the reflector **22** is preferably made of material having a good heat dissipation quality such as metal.

FIG. **5** is a sectional view of a vehicle lamp fixture **510** according to still another example embodiment of the invention. Constituent elements of this vehicle lamp fixture **510** that are similar or correspond to constituent elements of the vehicle lamp fixture **10** shown in FIGS. **1** and **2** will also be denoted by like reference characters and redundant descriptions of those elements will be appropriately omitted.

With the vehicle lamp fixture **510** according to this example embodiment, the circuit board **20** on which the LED **18** is mounted is attached to the inside surface **12***f* of the upper portion **12***b* of the front cover **12** via a metal plate **19**. That is, the circuit board **20** is attached to the inside surface **12***f* of the upper portion **12***b* of the front cover **12**, with the metal plate **19** sandwiched in between. The method by which the circuit board **20** and the metal plate **19** are fixed to the upper portion **14***b* is not particularly limited. That is, the circuit board **20** and the metal plate **19** may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like.

With this kind of structure as well, there is no need to provide a separate member for supporting the circuit board **20**, so the structure of the lamp fixture is able to be simplified. As a result, it is possible to reduce the number of parts and lower the cost, as well as make the lamp fixture lighter and smaller. Also, the circuit board **20** to which the LED **18** is mounted, and the reflector **22** are both attached to the upper portion **12***b* of the front cover **12**, which makes it easier to position the LED **18** and the reflector **22**, so the assembly time can be reduced and the optical precision can be improved.

Moreover, with the vehicle lamp fixture **510** according to this example embodiment, the metal plate **19** functions as a heat sink by being sandwiched between the circuit board **20** and the upper portion **12***b* of the front cover **12**, so the heat generated by the LED **18** is able to be better dissipated. The metal plate **19** may also be a member having a function to conduct electricity to the LED **18**, such as a bus bar.

FIG. **6** is a sectional view of a vehicle lamp fixture **610** according to yet another example embodiment of the invention. Constituent elements of this vehicle lamp fixture **610** that are similar or correspond to constituent elements of the vehicle lamp fixture **10** shown in FIGS. **1** and **2** will also be denoted by like reference characters and redundant descriptions of those elements will be appropriately omitted.

With the vehicle lamp fixture **610** according to this example embodiment, a metal heat sink **21** is integrally formed on a portion of the upper portion **12***b* of the front cover **12**, and the circuit board **20** to which the LED **18** is mounted is attached to this heat sink **21**. The heat sink **21** may be integrally formed with the upper portion **12***b* of the front cover **12** using insert molding, for example. The method by which the circuit board **20** is fixed to the heat sink **21** is not particularly limited. That is, the circuit board **20** may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like.

With this kind of structure as well, there is no need to provide a separate member for supporting the circuit board **20**, so the structure of the lamp fixture is able to be simplified. As a result, it is possible to reduce the number of parts and lower the cost, as well as make the lamp fixture lighter and smaller. Also, the circuit board **20** to which the LED **18** is mounted, and the reflector **22** are both attached to the upper portion **12***b* of the front cover **12**, which makes it easier to position the LED **18** and the reflector **22**, so the assembly time can be reduced and the optical precision can be improved.

Furthermore, with the vehicle lamp fixture **610** according to this example embodiment, the circuit board **20** is attached to the heat sink **21** formed on the upper portion **12***b* of the front cover **12**, so heat generated by the LED **18** is able to be even better dissipated. As a result, an LED **18** of even higher power can be used.

FIG. **7** is a sectional view of a vehicle lamp fixture **710** according to still yet another example embodiment of the invention. Constituent elements of this vehicle lamp fixture **710** that are similar or correspond to constituent elements of the vehicle lamp fixture **10** shown in FIGS. **1** and **2** will also be denoted by like reference characters and redundant descriptions of those elements will be appropriately omitted.

With the vehicle lamp fixture **710** according to this example embodiment, the circuit board **20** to which the LED **18** is mounted is attached to the inside surface **12***f* of the upper portion **12***b* of the front cover **12**. The method by which the circuit board **20** is fixed to the upper portion **14***b* is not particularly limited. That is, the circuit board **20** may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like.

Also, in this example embodiment, the attaching portion **22***b* of the reflector **22** is fixed on the circuit board **20**. As shown in the expanded view of the main portions of the vehicle lamp fixture **710** in FIG. **7**, a positioning protrusion **22***c* is formed on the attaching portion **22***b*. Inserting this positioning protrusion **22***c* into a positioning recessed portion **20***a* provided on the circuit board **20** enables the reflector **22** to be properly positioned with respect to the circuit board **20**. The method by which the attaching portion **22***b* is fixed to the circuit board **20** is not particularly limited. That is, the attaching portion **22***b* may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like.

With this kind of structure as well, there is no need to provide a separate member for supporting the circuit board

20, so the structure of the lamp fixture is able to be simplified. As a result, it is possible to reduce the number of parts and lower the cost, as well as make the lamp fixture lighter and smaller.

Also, the LED **18** and the reflector **22** are attached onto the circuit board **20**, so the positioning accuracy of the LED **18** and the reflector **22** can be increased, and the optical precision can be improved.

FIG. **8** is a sectional view of a vehicle lamp fixture **810** according to another example embodiment of the invention. Constituent elements of this vehicle lamp fixture **810** that are similar or correspond to constituent elements of the vehicle lamp fixture **10** shown in FIGS. **1** and **2** will also be denoted by like reference characters and redundant descriptions of those elements will be appropriately omitted.

With the vehicle lamp fixture **810** according to this example embodiment, a front surface of the back portion **14***a* of the lamp body **14** is formed as the reflective portion **22***a*. That is, the back portion **14***a* of the lamp body **14** also serves as the reflector.

Also, in this example embodiment, the upper portion **14***b* extends rearward from the upper end portion of the back portion **14***a* of the lamp body **14**, and the circuit board **20** is fixed to the upper portion **14***b* by a screw **812**. The method by which the circuit board **20** is fixed to the upper portion **14***b* is not particularly limited. That is, the circuit board **20** may be fastened by a screw, fixed by adhesive, or thermally caulked, or the like. The circuit board **20** is brought close to the upper portion **12***b* of the front cover **12**, but not so close as to interfere with the upper portion **12***b*.

With this kind of structure as well, there is no need to provide a separate member for supporting the circuit board **20**, so the structure of the lamp fixture is able to be simplified. As a result, it is possible to reduce the number of parts and lower the cost, as well as make the lamp fixture lighter and smaller.

Also, the back portion **14***a* of the lamp body **14** also serves as the reflector, so the number of parts can be further reduced, and in addition, the positioning accuracy of the LED **18** and the reflective portion **22***a* can be increased, and the optical precision can be improved. Moreover, the vehicle lamp fixture **810** according to this example embodiment is also advantageous in that heat is able to be exhausted outside of the lamp chamber **16** well.

The invention has been described based on various example embodiments. However, these example embodiments are merely examples. It is understood by one skilled in the art that various modified examples are possible for combinations of various processes and the constituent elements, and that these modified examples are also included in the scope of the invention.

For example, in the example embodiments described above, an LED is used as the light source, but a semiconductor light-emitting device such as a semiconductor laser, for example, may also be used.

In the example embodiments described above, the vehicle lamp fixture of the invention is applied to a small transportation device such as a personal mobility vehicle, but the vehicle lamp fixture of the invention may also be applied to a transportation device, such as a two-wheeled vehicle or an electric vehicle, for example, in which there is no other large heat source in the position where the vehicle lamp fixture is attached.

The transportation device lamp fixture may also include a reflector that reflects light emitted from the semiconductor light-emitting device in front of the lamp fixture. The reflector may be attached to one of the front cover and the lamp body, whichever the circuit board is attached to.

In the transportation device lamp fixture described above, the reflector may include a reflective portion for reflecting the light from the semiconductor light-emitting device, and an attaching portion for attaching the reflector to the front cover or the lamp body. Also, the circuit board may be attached to the front cover or the lamp body via the attaching portion of the reflector.

In the transportation device lamp fixture described above, a heat sink may be formed on a portion of the upper portion of the front cover or the lamp body, and the circuit board may be attached to the heat sink.

The transportation device lamp fixture described above may be mounted to a transportation device that does not have another heat source that is different from the transportation device lamp fixture, and that is located around a predetermined position where the lamp fixture is attached.

In the transportation device lamp fixture described above, the circuit board may be attached to the lamp body.

In the transportation device lamp fixture described above, a front surface of the back portion of the lamp body may be formed as the reflective portion.

What is claimed is:

1. A transportation device lamp fixture comprising:
- a semiconductor light-emitting device;
- a circuit board to which the semiconductor light-emitting device is mounted;
- a lamp body; and
- a front cover that covers an opening of the lamp body,
- wherein the semiconductor light-emitting device and the circuit board are housed inside of a lamp chamber formed by the lamp body and the front cover; and
- the circuit board is directly attached to an inside surface of an uppermost wall of the front cover that delimits the extent of the lamp chamber or an inside surface of an uppermost wall of the lamp body that delimits the extent of the lamp chamber.

2. The transportation device lamp fixture according to claim **1**, further comprising a reflector that reflects light emitted from the semiconductor light-emitting device in front of the lamp fixture, wherein the reflector is attached to one of the front cover and the lamp body, whichever the circuit board is attached to.

3. The transportation device lamp fixture according to claim **2**, wherein
- the reflector includes a reflective portion for reflecting the light from the semiconductor light-emitting device, and an attaching portion for attaching the reflector to the front cover or the lamp body; and
- the circuit board is attached to the front cover or the lamp body via the attaching portion of the reflector.

4. The transportation device lamp fixture according to claim **1**, wherein a heat sink is formed on a portion of the upper portion of the front cover or the upper portion of the lamp body, and the circuit board is attached to the heat sink.

5. The transportation device lamp fixture according to claim **1**, wherein
- the circuit board is attached to the lamp body.

6. The transportation device lamp fixture according to claim **5**, wherein
- a front surface of a back portion of the lamp body is formed as a reflective portion.

7. The transportation device lamp fixture according to claim **1**, wherein the transportation device lamp fixture is mounted to a transportation device that does not have another heat source that is different from the transportation device

lamp fixture, and that is located around a predetermined position where the lamp fixture is attached.

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